UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,434	08/05/2003	David Cope	EMI.1002	8296

7590 10/19/2005

HAYES SOLOWAY P.C.
175 Canal Street, 4th
Manchester, NH 03101-2335

EXAMINER	
RUTLAND WALLIS, MICHAEL	
ART UNIT	**PAPER NUMBER**
2835	

DATE MAILED: 10/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/634,434	COPE ET AL.	
	Examiner	Art Unit	
	Michael Rutland-Wallis	2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 August 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12/19/2003* + 11/12/04 MW
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because hand drawn element numbers and labels. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-5, 7-8, 12-16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Liu (U.S. Pat. No. 5,521,487).

With respect to claims 1, 12-13 and 18 Liu teaches a DC mitigation circuit, comprising: a control circuit (Fig. 6) for evaluating an amount of DC or harmonic current (Fig. 6 item 28 and 30 process the harmonic distortion) resulting from the DC in a transmission line; and switches (Fig. 1 item 10 and 11 solid state switches comprising a IGBT or thyristor switch) for providing a current into a winding of a transformer, said

switches being controlled by said control circuit, wherein said current provided to said winding generates a magnetic flux that offsets a flux created by said DC or harmonic current resulting from the DC in said transmission line (column 3 line 57 – column 4 line 24).

With respect to claim 3 Liu teaches DC mitigation circuit is connected to an output filter (Fig. 1 item 9) for filtering an output of said switches.

With respect to claim 4 Liu teaches the control circuit is connected to a primary winding of said transformer (Fig. 1 column 2 lines 1-20).

With respect to claim 5 Liu teaches control circuit is connected to a secondary winding of said transformer (Fig. 1 column 2 lines 1-20).

With respect to claim 7 Liu teaches the switches are connected to a tertiary winding (Fig. 1 item 5) of said transformer.

With respect to claim 8 Liu teaches the DC mitigation circuit of claim 1, further comprising a capacitor (Fig. 1 item U1) for powering said switches.

With respect to claim 14 Liu teaches the current supplied to said transformer winding is provided by an internal power supply (Fig.1 item U2).

With respect to claim 15 Liu teaches the switches are used to control said current that is outputted from said power supply to said transformer winding (Fig. 1 see column 3 lines 20-35).

With respect to claim 16 Liu teaches the step of filtering said current output from said switches (Fig. 1 item 9).

Claim 19 is rejected under 35 U.S.C. 102(b) as being anticipated by Oliver (U.S. Pat. No. 5,179,489). Oliver teaches a DC mitigation circuit (Fig. 1), comprising: means for evaluating an amount of DC or harmonic current (Fig. 9 shows a control circuit for evaluating and adjusting in response to DC current) resulting from the DC in a transmission line; and means (Fig. 9 item 74) for providing a current into a winding of a transformer, said means for providing a current into said winding being controlled by said means for evaluating (column 7 lines 25-50), wherein said current provided to said winding generates a magnetic flux that offsets a flux created by said DC or harmonic current resulting from the DC in said transmission line.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2, 9-11 and 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (U.S. Pat. No. 5,521,487) in view of *A Practical Approach to Harmonic Current Compensation by a Single-Phase Active Filter*.

With respect to claim 2 and 17 Liu teaches the switches are metal-oxide semiconductor field-effect transistors (IGBTs column 2 lines 20-23). While IGBTs are not necessarily a MOSFET type however it would have been obvious to one of ordinary

skill in the art at the time of the invention to use a MOSFET in place of an IGBT as taught by *A Practical Approach to Harmonic Current Compensation by a Single-Phase Active Filter* in Fig. 1.

With respect to claim 9 Liu teaches the use of the capacitors associated with the switches but does not teach the use of the diodes used in conjunction with the switches. *A Practical Approach to Harmonic Current Compensation by a Single-Phase Active Filter* in Fig. 1 teaches the use of switches further comprise diodes connected across said switches so as to charge said capacitor during a frequency cycle. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Liu to use a diodes connected across the switches to discharge the capacitor an supply the transformer and filter with power.

With respect to claim 10 Liu teaches the device of claim 1 and the use of a source connected across a the switches in Fig. 1 but does not teach the use of the teaches switches being MOSFETs and diodes carry current in an opposite direction from said MOSFET switches. *A Practical Approach to Harmonic Current Compensation by a Single-Phase Active Filter* in Fig. 1 teaches switches being MOSFETs and diodes connected across a source and drain of said MOSFET switches so as to carry current in an opposite direction from said MOSFET switches (Fig. 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Liu to use a diodes connected across the switches connected to Liu source in control the source.

With respect to claim 11 Liu teaches said capacitor discharges during said frequency cycle so as to power said MOSFET switches. *A Practical Approach to*

Harmonic Current Compensation by a Single-Phase Active Filter in Fig. 1 teaches diodes which are configured to discharge the capacitor during a frequency cycle. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Liu to control the discharge of the capacitors.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (U.S. Pat. No. 5,521,487) in view Oliver (U.S. Pat. No. 5,179,489).

With respect to claim 6 Liu teaches the control circuit is connected to said transformer but does not teach the connection to the core of the transformer. Oliver teaches connecting a filter to the core of a transformer. It would have been obvious to one of ordinary skill in the art at the time of the invention to move Liu's connection point to the core to increase the efficiency of the of the transformer.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. IEEE Transactions on Power Delivery GIC Mitigation: A Neutral Blocking / Bypass Device to Prevent the Flow of GIC in Power Systems, Oliver (U.S. Pat. No. 5,136,453), Owen (U.S. Pat. No. 5,005,100), Julien (U.S. Pat. No. 4,521,822) and Russo (U.S. Pat. No. 5,930,064) all teach DC mitigation system and methods, which are considered state of the art at the time of the invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Rutland-Wallis whose telephone number is 571-

272-5921. The examiner can normally be reached on Monday-Thursday 7:30AM-6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild can be reached on 571-272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MRW

ANATOLY VORTMAN
PRIMARY EXAMINER